

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte Yie-Shein Her, Ramanathan Srinivasan, Suryadevara Babu,
and Suresh Ramarajan

Appeal No. 2003-1092
Application No. 09/692,730

ON BRIEF

Before GARRIS, OWENS, and WALTZ, Administrative Patent Judges.
GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the final rejection of claims 2, 4-16 and 18-20 which are all of the claims remaining in the application.

The subject matter on appeal relates to a chemical-mechanical polishing slurry comprising an amount of an agent selected from the group consisting of lysine and arginine sufficient to suppress the rate at which an underlying silicon-containing dielectric layer is removed by at least about 50%. This appealed subject matter is

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adequately illustrated by independent claim 2 which reads as follows:

2. A chemical-mechanical polishing slurry for use in removing a barrier layer during the fabrication of a damascene structure comprising an amount of an agent selected from the group consisting of lysine and arginine sufficient to suppress the rate at which an underlying silicon-containing dielectric layer is removed by at least about 50% as compared to the rate at which said underlying silicon-containing dielectric layer would be removed if said agent was not present in said slurry.

The references set forth below are relied upon by the Examiner as evidence of obviousness:

Grumbine et al. (Grumbine)	6,136,711	Oct. 24, 2000 (filed May 29, 1998)
Kaisaki et al. (Kaisaki)	6,194,317	Feb. 27, 2001 (effective filing date Jun 24, 1998)

All of the claims on appeal stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kaisaki in view of Grumbine. On page 4 of the answer, the Examiner expresses his obviousness conclusion in the following manner:

Since Kaisaki is concerned with a polishing slurry having lysine to polish TiN layer while suppressing the removal rate of the underlying dielectric layer, one skilled in the art would have found it obvious to modify Kaisaki slurry by using a sufficient amount of lysine in a slurry as taught by Grumbine especially because Grumbine states that his CMP exhibits desirable low polishing rate towards the dielectric insulating layer (col 9, lines 49-51).

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We refer to the brief and to the answer for a complete exposition of the opposing viewpoints expressed by the Appellants and by the Examiner concerning the above noted rejection.

OPINION

For the reasons set forth below, this rejection cannot be sustained.

As correctly indicated by the Appellants in their brief, Kaisaki teaches using lysine in an ammonium ion buffer system for controlling the pH of his slurry (e.g., see lines 40-62 in column 14), whereas Grumbine teaches using lysine in his slurry for inhibiting the etching or corrosion of tungsten (e.g., see lines 4-24 in column 6). Clearly, the pH buffering purpose or function served by lysine in Kaisaki's slurry is completely unrelated to the tungsten etch/corrosion inhibiting purpose or function served by the lysine in Grumbine's slurry. Because these purposes or functions are unrelated, an artisan would have had no basis for believing that the inhibiting-effective concentrations of Grumbine would also be effective for achieving the tungsten etch/corrosion inhibiting desideratum of Kaisaki. It follows that the here applied references would not have provided either a motivation or

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a reasonable expectation of success vis-à-vis the combination proposed by the Examiner. In re O'Farrell, 853 F.2d 894, 903, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988).

Under these circumstances, we cannot sustain the Examiner's § 103 rejection of all appealed claims as being unpatentable over Kaisaki in view of Grumbine.

OTHER ISSUES

On pages 3-4 of the answer (as well as on page 3 of the final office action), the Examiner makes the following statement:

However, Grumbine discloses a polishing composition/slurry to polish TiN layer, the slurry comprises from about 0.001 to about 2.0 weight percent of lysine (col 6, lines 5-23). Grumbine's slurry reads on a slurry comprises a sufficient amount of lysine/arginine to suppress the rate at which an underlying silicon-containing dielectric layer is removed because 0.1 to about 5.0 weight percent of lysine in a slurry, is defined in page 6 of the instant specification, as a sufficient amount of lysine/arginine to suppress the rate at which an underlying silicon-containing dielectric layer is removed.

This statement indicates that, in the Examiner's view, the lysine-containing slurry of Grumbine "reads on" the lysine-containing slurry defined by at least certain of the appealed claims (e.g., see independent claim 2 and claim 4 which depends therefrom) because the lysine concentration taught by Grumbine

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overlaps the lysine concentration taught and claimed by the Appellants. Stated otherwise, as it presently exists, the application file record reflects that the Examiner believes at least some of the appealed claims are unpatentable over the disclosure of Grumbine. We will not here comment upon whether or not such a belief is well founded since the appeal before us does not present such an issue.

Nevertheless, the file record must be clarified in terms of claim patentability versus unpatentability in relation to the Examiner's aforequoted statement. This is because, in the absence of clarification, the Examiner's statement could be interpreted as militating against the validity of any patent claims which might issue from this application. As a consequence, upon return of the subject application to the jurisdiction of the Examining Corps, the Examiner must address and resolve on the written record whether and why he believes the slurry defined by some or all of the appealed claims to be patentably distinguishable or indistinguishable from the slurry disclosed by Grumbine.

For example, the Examiner may believe that an artisan in formulating a slurry in accordance with Grumbine's disclosure would have found it obvious to select lysine specifically as a tungsten etch/corrosion inhibiting agent and would have found it obvious to

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select specific concentrations from patentee's broadly disclosed range which fall within the Appellants' disclosed and claimed range of lysine concentration. If so and if the Examiner further believes that the slurry resulting from these selections is indistinguishable from the slurry claimed by the Appellants, the Examiner must express these beliefs and the reasons therefor in the context of a rejection under 35 U.S.C. § 103. On the other hand, if the Examiner believes the appealed claims are patentable over Grumbine, this belief and the reasons therefor must be expressly stated in the record of this application file.

In any case, it is paramount that the record be clarified as to whether and why the Examiner considers the appealed claims to be patentable or unpatentable over the above discussed disclosure of Grumbine.

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SUMMARY

The decision of the Examiner is reversed.

REVERSED

BRADLEY R. GARRIS)	
Administrative Patent Judge)	
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)	
)	BOARD OF PATENT
TERRY J. OWENS)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
THOMAS A. WALTZ)	
Administrative Patent Judge)	

BRG/jrg

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